2006

EPI NORTH

The Northwest Territories' Epidemiology Newsletter

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Annual Tuberculosis Review for 2005

Cheryl Case, Communicable Disease Specialist

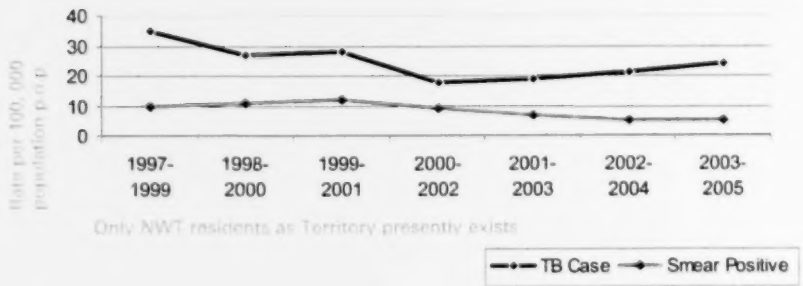
Department of Health and Social Services

This report presents selected statistical and epidemiological information referring to tuberculosis (TB) in the Northwest Territories (NWT) derived from the activities reported to the centralized TB program, Office of the Chief Medical Health Officer. This data is captured on various TB reporting forms. This report presents the TB epidemiology for the last decade along with a summary of the 2005 TB statistics.

Overview of Tuberculosis in 2005 and how it compares with other years:

In 2005, there were 8 cases of tuberculosis (TB) diagnosed in the NWT, a rate of 18 per 100,000. This represented a rate decrease of about 20 percent. Figure 1 outlines the three-year running average of TB incidence rates in the NWT from 1997 to 2006, demonstrating a slightly rising trend in incidence rates for the past 5 years. Smear positive rate for pulmonary cases has been lowering to approximately 5 smear positive pulmonary cases per 100,000 population per year in the last 5 years.

Figure1: TB Cases and Smear Positive Pulmonary Cases
3 Yr. Running Average 1997 - 2005



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2008-02853/

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Editor's Notes:

Janet Hopkins, Managing Editor, EpiNorth, Department of Health and Social Services

Welcome to another online production of EpiNorth. I would like to thank all those who took the time out of their busy summer to submit articles for this issue.

The changing of the seasons can mean increased risks of respiratory illness. Lindsay Beck BSc. Summer Student, SRHA provides an update on the Influenza Vaccine Program for the NWT 2006/2007 reminding everyone that immunization is the most effective means to reduce the impact of influenza.

Cheryl Case, Communicable Disease Specialist provides the TB Annual Tuberculosis Review for 2005, this report presents the TB epidemiology for the last decade along with a summary of the 2005 TB statistics.

The NWT TB Conference-Next Steps also by Cheryl Case, shares a summary of the first NWT TB Conference. This article explores the three major concerns presented during the two-day conference. It also addresses positive outcomes from community networking; clinical aspects of diagnosis and treatment, and the need for continuation of the TB work especially the preventative surveillance being done in the NWT.

Lona Hegeman, Health Promotion Specialist, and Christine Raves, Health Promotion Intern, in their article on Community Health Representatives and Traditional Knowledge introduce the recently graduated Community Health Representatives (CHRs) from throughout the NWT who serve as a critical link between a Western medical system and traditional Aboriginal communities.

Human Metapneumovirus as a Cause of Significant Respiratory Infection and Disease by Dr. Julie D. Fox, PhD MRCPath. Clinical Virologist Provincial Health Public Laboratory (Microbiology), Alberta, this article gives an in-depth look at the changes being implemented for the diagnosis of metapneumovirus. Dr. Fox discusses the introduction of the new testing method Nuclei Acid Basted Testing (NAT). The NAT method allows identification of hMAV in the context of acute respiratory infection where no respiratory pathogen was found. The new testing method can now identify respiratory disease caused by hMPV which would have previously been described as unknown etiology.

Helen MacPherson, Senior Disease Registry Officer keeps us updated on the status of the Notifiable Diseases in the NWT.

As always we invite your comments or suggestions regarding articles that appear in EpiNorth. The Editor also welcomes articles with NWT relevance from any authors.

Continued from page 1

Other epidemiological information

- Gender breakdown was 6 males and 2 females.
- The average age was 59 years (median was 68 years). Age range was 2 to 82 years. Figure 2 demonstrates age breakdown on TB cases from 2000 -2005 showing more than 50 percent of the cases are greater than 50 years of age.
- There were 5 Dene, 2 Inuit and 1 non-aboriginal.
- Six of the cases were pulmonary with one smear positive case - smear positive rate of 2.3 per 100,000.
- One case was primary TB and one was extra-pulmonary- sputum samples from the primary TB case did not grow *M. tuberculosis* and the extra-pulmonary case had samples collected from the diseased lymph node where histological stains demonstrated acid-fast bacilli (AFB) but were not cultured for *M. tuberculosis*.
- HIV Status - 50 percent of the cases had HIV testing done - all were negative.
- Drug Resistance - 6 of the 8 cases were culture confirmed, all 6 isolates were susceptible to first-line antibiotics which include isoniazid, rifampin, pyrazinamide and ethambutol.
- Treatment and Outcomes- 7 of the 8 cases completed 100% of treatment while 1 case died of an unrelated cause.
- Case finding - 4 by symptom presentation, 2 through contact investigation and 2 through surveillance of high-risk groups.

Figure 2: TB by age 2000 - 2005 (n=51)

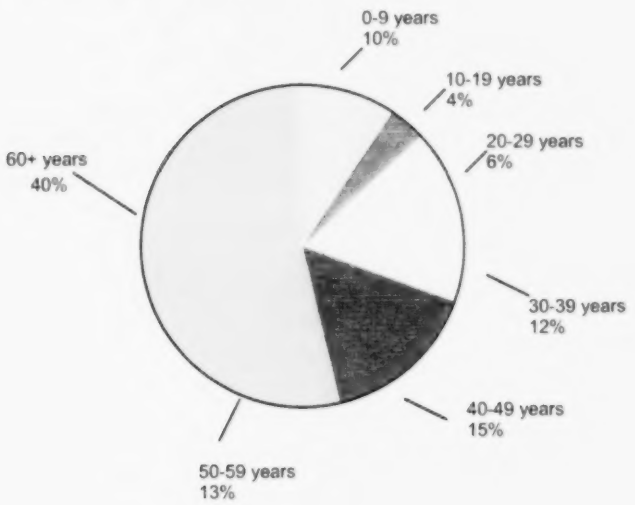


Figure 3 shows the average TB rates by health authority for 1999-2005.Tlicho Yellowknife and DehCho authorities have the highest rates. Please note that Yellowknife Authority includes Deninu and Lutselk'e, with the latter community experiencing an outbreak in 1994-1995.

Figure 3: TB rate per 100,000 by Health Authority, 1999-2005

Latent Tuberculosis infection rates:

Contact Tracing:

As outlined in the 2005 case summary, six were pulmonary TB cases, one of which was smear positive. All pulmonary cases had contact tracing done. The only case that showed infectivity was the smear positive case, with an infectivity rate of 12.5 percent. Of the total 242 identified contacts, 142 had Mantoux skin testing done with 19 found to have significant results indicating infection. One of the contacts was determined to have primary tuberculosis, thus treated as a case and included in the case summary above. The remaining 18 did not have the active form of tuberculosis disease, and were offered treatment for infection. All successfully completed treatment. One hundred of the 242 contacts, either had TB or LTBI, with records of adequate treatment sometime in the past, while 30 had records of insufficient treatment. For the most part, contact tracing is done timely and completely for children and those demonstrating a new infection. However, there as still missed opportunities to treat those with latent TB infection who have been insufficiently treated.

Surveillance:

Mantoux skin testing was used to screen 562 individuals for reasons other than contact tracing. Reasons for screening included school screening programs in the TB endemic communities at ages 5, 10 and 15 years, pre-employment medicals, health care workers, residents of long term care facilities and travelers. TB endemic communities are defined as 1% case rate or 10% infectivity rate in the community. Of the 562 Mantoux skin tests done, 178 were positive. 114 successfully completed treatment of LTBI following investigation to rule-out active TB.

Summary:

Overall, the status of TB is showing indications of good control efforts. Of the eight cases reported, only one case was advanced disease, using smear positive status as an indicator. All remaining pulmonary cases showed low infectivity using standard contact tracing investigation method. The mean age was 58, an indicator that disease is occurring in the older population, most of whom had evidence of childhood infections. Contact tracing, an important component of TB control, illustrated achievement of the investigation with regards to treatment completion for all those with new infections. Concerning contact tracing, the main area requiring enhancement is taking further steps to treat those with LTBI from earlier TB exposures in their lifetime. Surveillance also demonstrated successful follow-up with screening. Of the 178 individuals screened through surveillance 64 percent (114) successfully completed treatment for LTBI. Although this report summarizes a promising status of TB control in the NWT, mindful due diligence with assigned resources in the TB program remains the critical component to continue to improve TB control in the NWT.

Acknowledgements:
Special thanks to the Disease Registry Team, Population Health for preparing the data for this article.

Human Metapneumovirus as a Cause of Significant Respiratory Infection and Disease

r. Julie D Fox PhD MRCPath. Clinical Virologist
Provincial Health Public Laboratory (Microbiology), Alberta

Background

The changes in the Alberta Provincial Public Health Laboratory (Prov. Lab) respiratory diagnostic algorithm, undertaken during 2005, enabled the testing of selected respiratory specimens for human metapneumovirus (hMPV). This virus has increasingly been shown to be an important cause of acute infections in the young and elderly but cannot be identified by routine antigen and culture methods.

In January 2005, a change was made to test all lower respiratory specimens with a request for viral diagnosis by a molecular panel [for influenza virus A and B, parainfluenzaviruses 1-4, adenoviruses, respiratory syncytial virus (RSV) and hMPV] rather than using the previous combination of direct antigen testing (DFA) and culture. The yield by these latter methods was known to be poor on specimens such as bronchoalveolar lavage (BAL) and thus it was thought that sensitive nucleic acid based testing (NAT) could have a positive impact for this patient group. After successful implementation of this change, a further alteration in the diagnostic algorithm was introduced in November 2005. At this stage we stopped performing rapid plate and conventional culture on all respiratory specimens as a front-line diagnostic test and so now rely on a combination of DFA and NAT.

The changes in our diagnostic algorithm for respiratory viruses have allowed us to identify hMPV in the context of acute respiratory infection in an individual where no other respiratory pathogen was found, in association with other pathogens in immunocompetent and immunosuppressed individuals and in six outbreak situations. Our data (and thsupport a role for hMPV as a potential cause of significant disease in the young and elderly, where it may present in a similar way to the related human virus, RSV.

In the NWT 14 reports of Human Metapneumovirus have been documented since January 2006.

Current respiratory testing algorithm

DFA (for influenza A and B, RSV and parainfluenzaviruses) is still undertaken on all appropriate specimens (NP swabs and aspirates from acute infections and outbreaks). If the specimen is DFA positive this is reported and no further diagnostic testing is undertaken. If DFA negative the NP specimen is tested by the molecular panel. All other specimens (including throat swabs, tissues and lower respiratory specimens) are subjected to the molecular panel testing only. Despite our high pick up of hMPV using this algorithm we will still be missing potential co-infections where the specimen is DFA positive. It is not currently considered cost effective to do NAT on all submitted specimens that are DFA positive.

Results for the assay and validation phase

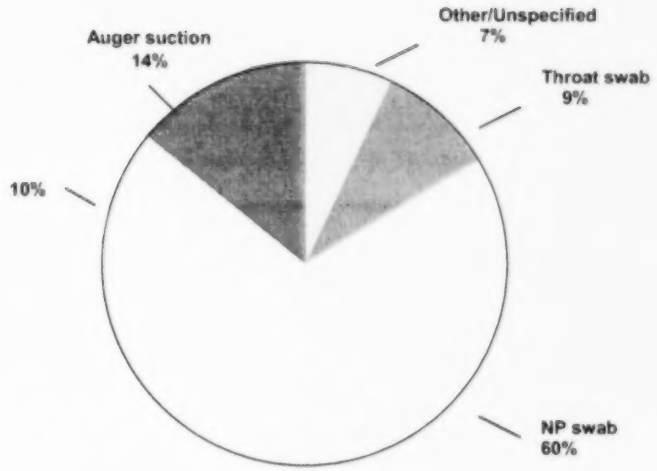
Limit of detection for the hMPV NAT was between 4 and 77 input copies of hMPV synthetic RNA. Specificity of the assay was 100% as determined by testing RNA/DNA of various other respiratory viral and bacterial organisms. During the validation phase, retrospective testing of specimens was undertaken (without reporting). Twenty-six mixed respiratory specimen types tested retrospectively (from a total of 676), contained detectable hMPV RNA (3.8%).

Prospective testing for hMPV during 2005

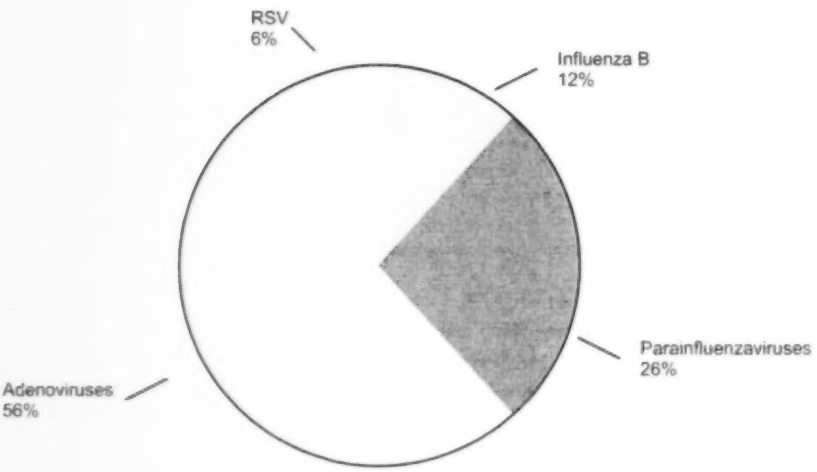
During 2005, 208 hMPV positive samples (6% of the 3269 positive samples tested) from 184 patients were identified. These positive patients ranged in age from 5 weeks to 95 years. Co-infection with other respiratory viruses was relatively common in all patient groups (17% of hMPV positive samples were also positive for another viral target by NAT). Co-infection rate for hMPV positive specimens was 2% for influenza B, 5% for parainfluenzaviruses, 10% for adenoviruses and 2% for RSV. The majority of hMPV positive results were from NP specimens and young children with acute respiratory symptoms accounted for the majority (even though routine testing of NP specimens, the most common specimen from children with acute infection, only began in mid November).

Six outbreaks in 2005 were associated with metapneumovirus infection (since we began reporting formally); two of these had influenza B positives in the same outbreak (EI 363 and 368), one had adenovirus detected in a second sample from the outbreak (EI 207) and in three outbreaks only metapneumovirus was found (EI 115, 350 and 354).

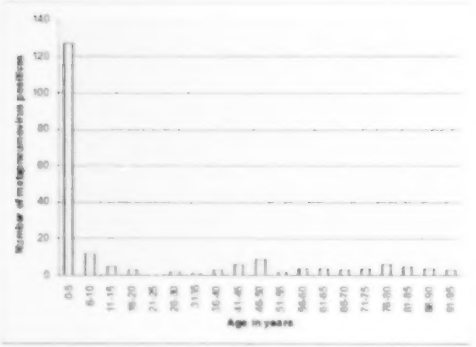
Specimen Types for Metapneumovirus Positive Samples (n=203)

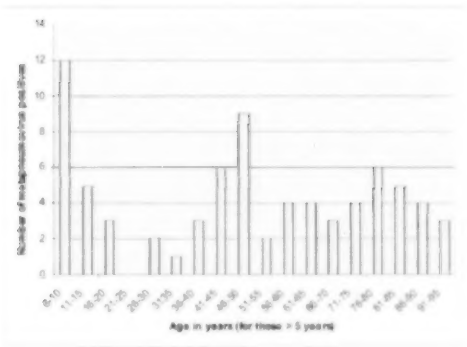


Other Positive NAT Results for Metapneumovirus Positive Specimens (n=34), 17% of Total Metapneumovirus Positive Samples Had A Second Positive Result)



Age range for positive metapneumovirus specimens





Conclusions

The real time RT-PCR (reverse transcription-polymerase chain reaction) for hMPV is useful for resolving respiratory infections of previously unknown etiology, both presenting as an acute infection in an individual and in the context of an outbreak. Analysis of data over a full respiratory season will prove valuable in our understanding of hMPV epidemiology. Also, the skew towards positives from young children and babies reflects the higher number of tests for metapneumovirus in this group. Analysis will be undertaken to plot percentage positive in each age group for further discussion.

Influenza Vaccine Program for the NWT 2006/2007

Lindsay Beck BSc.

Summer Student Stanton Regional Health Authority

In Canada, flu season generally runs from November to April[1]. Annual immunization against influenza is required to maintain optimal protection because there is a constant change in circulating and emerging influenza viruses.

In the NWT, mid-October to the end of November is the recommended time for influenza vaccination so that people reach peak seroprotective levels before the virus is first introduced in the community. However, flu vaccine manufacturers have reported problems growing one of the flu strains required for this season's flu shot. As a result, the vaccine should be available to the provinces and territories at the end of October or beginning of November.

Please note:

The Influenza vaccine Program in the NWT will be delayed due to vaccine production problems. The flu vaccine clinics should start by mid-November, 2006.

Influenza Vaccine For The 2006-2007 Season

The antigenic characteristics of the circulating and emerging influenza virus strains provide the basis for selecting the strains included in the vaccine. For the 2006-2007 season, the National Advisory Committee on Immunization (NACI) has recommended that the vaccine offered to Canadians include[2]:

- A/New Caledonia/20/99 (H1N1)-like,
- A/Wisconsin/67/2005 (H3N2)-like
- B/Malaysia/2506/2004-like

The influenza vaccine should be offered in priority to all those at high risk for influenza-related complications:

- Adults and children with selected *chronic health conditions* (if significant enough to require regular medical follow-up or hospital care):
    1. Cardiac or pulmonary disorders (including bronchopulmonary dysplasia, cystic fibrosis, and asthma)
    2. Diabetes mellitus and other metabolic diseases
    3. Cancer, immunodeficiency, immunosuppression (due to underlying disease and/or therapy)
    4. Renal disease
    5. Anemia or hemoglobinopathy
    6. Conditions that compromise the management of respiratory secretions

       and are associated with an increased risk of aspiration
    7. Children and adolescents with conditions treated for long periods with acetylsalicylic acid
- People of any age who are residents of nursing homes and other chronic care facilities.
- People > 65 years of age; and
- Healthy children aged 6 to 23 months.

The vaccine should also be actively promoted and offered to those capable of transmitting influenza to individuals at high risk for complications, and those who provide essential community services:

· *Health care and other care providers* in facilities and community settings who, through their activities, are potentially capable of transmitting influenza to those at high risk of influenza complications.

· *Household contacts* (adults and children) of people at high risk of influenza complications, whether or not they have been immunized:

1. Household contacts of children < 6 months of age (who are at high risk of complications from influenza but for whom there is no available effective vaccine);
2. Household contacts of children aged 6 to 23 months;
3. Pregnant women should be immunized in their third trimester if they are expected to deliver during influenza season, as they will become household contacts of their newborn;

· People that provide regular childcare to children age 0-23 months, whether in or out of the home; and

· Those who provide services within closed or relatively closed settings to persons at high risk.

As supplied below, influenza vaccine should then be offered to others, such as:

· People who provide essential community services;

· People in direct contact with avian-influenza infected poultry during culling operations;

· Pregnant and lactating women. Influenza vaccine is safe for pregnant women at all stages of pregnancy and for breastfeeding mothers;

· Travellers who have trips planned to destinations where influenza is likely to be circulating; and

· Healthy persons aged 2 to 64 years.

Contraindications and precautions:

The influenza vaccine should not be given to people who have had an anaphylactic reaction to a previous dose of Influenza vaccine, or persons with known IgE-mediated hypersensitivity to eggs or chicken (manifested as hives, swelling of the mouth and throat, difficulty in breathing, hypotension or shock) should not be routinely vaccinated with influenza vaccine.

Adults with serious acute febrile illness should only be vaccinated once their symptoms have abated.

All adverse reactions should be reported to the Office of the CMHO. Vaccine Associated Adverse Event (VAAE) is the specific form used to report this event (available at http://www.phac-aspc.gc.ca/im/pdf/hc4229e.pdf).

Administration of the influenza vaccine

Influenza vaccine should be stored at 2 °C to 8 °C and should not be frozen.

Also, immunity declines quickly in the year following vaccination. Each 0.5mL of the vaccine contains 15µg of hemagglutinin of influenza specific antigen. The vaccine is available as a split-virus (chemically disrupted) and cannot cause influenza (See Table 1). Protection generally begins 2 week after immunization and may last up to 6 months or longer. However, in the elderly, antibody levels fall below protective leve's in less than 4 months.

Table 1: Recommended influenza vaccine dosage, by age, for the 2006-2007 season

Age	Vaccine Type	Dose (mL)	No. of Doses
6 - 35 months	Split virus	0.25	1 or 2*
3 - 8 Years	Split virus	0.5	1 or 2*
> 9 Years	Split virus	0.5	1
> 18 Years	Subunit/Split virus	0.5	1

* Previously unvaccinated children < 9 years require two doses of the split-virus influenza, with an interval of 4 weeks

Immunization of Health Care Workers (HCWs):

NACI considers the provision of influenza vaccination for HCWs who have direct patient contact to be an essential component of the standard of care for the protection of their patients. HCWs who have direct patient contact should consider their responsibility to provide the highest standard of care, which includes undergoing annual influenza vaccination. In the absence of contraindications, refusal of HCWs who have direct patient contact to be immunized against influenza implies failure in their duty of care to patients. In order to protect vulnerable patients during an outbreak, it is reasonable to exclude from direct patient contact HCWs who develop confirmed or presumed influenza and unvaccinated HCWs who are not receiving antiviral prophylaxis.

Annual influenza immunization of health care workers is an essential part of influenza prevention and control. It has been shown to decrease morbidity and mortality in individuals at high-risk for influenza-related complications as well as decrease illness and absenteeism in health care workers.

This fall, a promotional package entitled: "I Care! I Had My Flu Vaccine" will be distributed to Health Care Workers. It is intended primarily for staff working in the hospitals and long term care facilities. Keep a watchful eye for the promotional material in October!

Conclusion:

Influenza has the ability to produce annual epidemics and periodic pandemics with accompanying high levels of morbidity and mortality. Immunization is the most effective means to reduce the impact of influenza. Annual influenza programs are not associated with long-term health problems, and have great short-term rewards for individuals and the population.

As noted above, influenza vaccination is a very important seasonal program. The following immunization programs are also routinely offered in the fall:

- pneumococcal;
- and grade nine tetanus, diphtheria and acellular pertussis.

Late summer/early fall is the time to prepare for all seasonal vaccine programs. These vaccines can be ordered from your regional pharmacist.

References:

[1]INFLUENZA. Public Health Agency of Canada, www.phac-aspcgc.ca/influenza/index/html, 2006-03-27.
[2]Canada Communicable Disease Report STATEMENT ON INFLUENZA VACCINATION FOR THE 2006-2007 SEASON. Public Health Agency of Canada. Volume 32-ACS-7. 15 June 2006.

NWT TB Conference - Next Steps

Cheryl Case, Communicable Disease Specialist
Department of Health and Social Services

One highlight of the Northwest Territories (NWT) TB program in 2005-2006 centered on the first NWT Tuberculosis (TB) Conference that was held February 2nd and 3rd, 2006. All segments of the health care field were well represented with participants from nursing, medicine, social work, laboratory, pharmacy, radiology, community health representatives and community leaders.

The various subjects addressed at the conference included TB surveillance and early detection, new screening tools and evaluation of the BCG program. At the end of the conference, 3 sets of questions remained:

1. Concerning continuation of BCG vaccination in infants
2. Mantoux skin testing versus a new method called Quantiferon-Gold and;
3. Resources for achieving TB elimination.

In this article I will attempt to explain how and whythequestions surfaced and rationalize how we can fulfill or answer them.

Highlights from the TB Conference:

Resources for achieving TB elimination

Dr. Anne Fanning, Professor Emeritus, University of Alberta, was a keynote speaker. Early into the first conference day, Dr. Fanning posed a challenge to the 170 participants at the conference - "Put knowledge into ACTION". :. Many of the participants tilted an eager ear to this motivating message. She spoke on various topics with the underlying message that "TB can be eliminated by 2040", **assuming the current rate of decline can be maintained.** To do so however, we have to find the cases early, make sure they are cured and stop transmission. We must continue to do what we are already doing, and keep improving.

Specific recommendations for enhancing educational opportunities were:

- forming partnerships among circumpolar countries and Canadian territories;
- creating forums for continued learning, such as, expanding medical TB rounds to other hospitals/public health units and opportunities for on-line courses for health professionals working in the north;
- developing a public health nurse network in the NWT and reactivating an advisory council on tuberculosis; and
- forming partnerships with community leaders to strengthen the political will to address the problem and find solutions for tuberculosis.

Dr. Fanning urged the public health team to be inventive in finding all cases of TB. One suggestion made was to trial a cough registry so that greater emphasis is placed in finding symptomatic cases early. She expressed her belief that not all active cases are being found and this trial would show where some of the deficits are in case finding. The preventative work being done with contact tracing needs improvement, with timely screening for all contacts and a stronger commitment to prophylaxis, otherwise described as treatment for latent TB infection (LTBI). In other words, treating the infection before the disease develops.

Lastly, she recommended annual reporting (as is done in EpiNorth) but also a reporting/communication process with each health authority on a quarterly or biannual basis - an evaluation tool for monitoring their program by measuring screening activities and outcomes.

Quantiferon-Gold

Dr. Dennis Kunimoto, professor of Medicine at the University of Alberta, presented two new screening tools; T-spot testing and Quantiferon-Gold. The two methods detect interferon-gamma production, a cytokine produced by cell-mediated immune response to two specific proteins, ESAT-6 and CPF-10, both produced by *Mycobacterium tuberculosis.* T-spot detects the production of interferon-gamma in cell culture and Quantiferon-Gold by ELISA test-tube method. Both tests are highly specific and sensitive for detecting interferon-gamma production as a direct response to *M. tuberculosis* infection. BCG does not interfere with either test[1].

The Quantiferon-Gold test would be feasible in small

health centers since it involves collection of blood samples in specific Quantiferon-Gold test tubes, centrifugation and submitting the plasma for laboratory analysis. A Quantiferon-Gold research study is presently underway at the University of Alberta and is showing promising results.

The office of the Chief Medical Health Officer continues to recommend using the Mantoux skin test, the standard screening tool in Canada until more data is available. However, the NWT program will be ready to evaluate and implement this test in health care settings. Incidentally, Quantiferon-Gold became a Canadian licensed test on August 21, 2006. The Mantoux skin test will most likely continue to be the standard TB screening tool, using Quantiferon-Gold, in situations where questionable Mantoux skin tests may be attributable to BCG vaccine or atypical mycobacterium.

Discontinuation of BCG vaccine

Dr. Richard Long, also from the University of Alberta, presented "BCG (Bacille Calmette-Guérin) in the Canadian North: Pros and Cons". In the NWT, BCG vaccine was introduced in the 1950's to combat the high rates and mortality rates from TB, and it still remains in use today. There is little doubt that the vaccine prevents severe life-threatening forms of tuberculosis, such as central nervous system and disseminated tuberculosis or miliary TB in children[2]. Generally, the BCG vaccine provides an overall protective effect against all forms of TB disease by 50 percent[3,4]. For the most part, this vaccine's side effects are inconsequential with local reactions, such as, ulceration or abscess formation at the vaccine site. More severe reactions include suppurative lymphadentitis and severe reactions are osteomyelitis and systemic reactions such as disseminated BCG.

Dr. Long presented compelling data on six cases of disseminated BCG between 1993 and 2002, 5 of whom were First Nations and Inuit children and all of whom died. These children had underlying immunodeficiency such as severe combined immunodeficiency syndrome (SCIDS), HIV infection or post transplant. Following review of these serious outcomes related to BCG administration, provincial and territorial public health specialist evaluated the risks and benefits of the BCG vaccine.

On April 1, 2004, in Alberta, BCG vaccination was discontinued in all but four First Nations communities. Guidance for this decision was based on The International Union against Tuberculosis and Lung Disease (IUATLD) recommendations stating BCG discontinuation should be considered when:

- An effective notification system is in place; and either
- The average annual notification rate of smear-positive pulmonary tuberculosis is < 5 per 100,000; or
- The average annual notification rate of tuberculosis meningitis in children < 5 years is <1 per 10 million population over the previous 5 years; or
- The average annual risk of tuberculosis is 0.1% or less.

This decision was planned and resourced, to ensure that infectivity rates through tuberculin skin testing and new TB case rates were monitored and managed to ensure the risks of infection were low in the Alberta First Nations Reserves. Education for all of the effected First Nations communities was the top priority ensuring all knew and understood the benefits and risks of discontinuing the BCG vaccine. Discontinuation meant enhanced surveillance for disease and infection through serially tuberculin skin (Mantoux) testing children so infected children are identified and treated early.

Present Status of Tuberculosis in the NWT - evaluation of BCG program:

Referring to the guidance outlined by the IUATLD for withdrawal of the BCG vaccine, the following will outline the present status in the NWT.

Recommendation 1

An effective notification system is in place. In the NWT, the TB program has been centralized since devolution of health services from the Medical Service Branch, Federal Government in 1988. This infrastructure has provided structured and standard surveillance and notification system throughout the NWT.

Recommendation 2

The average annual notification rate of smear-positive pulmonary tuberculosis is < 5/100,000. The NWT smear-positive pulmonary tuberculosis 3-year running average has been 5/100,000 population for 2002-2005.

Recommendation 3

The average annual notification rate of tuberculosis meningitis in children <5 years is <1 per 10 million population over the previous 5 years. The NWT has not had a reported case of TB meningitis in the last 10 years.

Recommendation 4

The average annual risk of tuberculosis is 0.1%. In 2005, the annual risk of infection for children aged 4 - 10 years was 0.9%. This analysis was based on the total number (n = 366) of Mantoux skin tests done in 2005 on children aged 4-10 years of age. Many would have been screened through the school TB screening program in all communities in the NWT except for Yellowknife. School screening is done in TB endemic communities, defined as 1% case rate or 10% infectivity rate in the community. Approximately 50% of the children were vaccinated at birth with the BCG vaccine, based on the 2002 BCG vaccine coverage rate. A positive tuberculin skin test was defined as 10mm or greater as defined in section 5 of the NWT TB Manual (2003) http://www.hlthss.gov.nt.ca/content/Publications/manuals/manuals.asp and Canadian TB Standard 5th ed (2000). There were 23 tests counted as positive. Assuming BCG may interfere with the specificity of the Mantoux skin test, i.e. cause false positives, this age group was chosen since for the majority of this age group, this was their first test, thus lessened the boosted response of two or more Mantoux skin tests. Certainly this estimation of annual risk of infection does have limitations and could be overestimated due to the interference of the BCG vaccination at birth.

Adverse BCG Reactions:

Another consideration with BCG vaccine administration is determining the risks that it poses to the population having the vaccine. In the NWT, review of the 2001-2005 Vaccine Associated Adverse Events (VAAE) reports revealed, two moderately severe adverse events reported out of 1,395 doses of BCG administered (based on 2002 BCG vaccine coverage survey). The two adverse events were associated with BCG and Hepatitis B vaccines given 1 day after birth, with one case presenting 1 month post vaccine with a sterile abscess and afebrile seizure while the second case presented 3 months post BCG and Hepatitis B vaccine at birth with thrombocytopenia - no other causation determined. Both recovered from the vaccine associated event. In this time period, there were no adverse events with presentations of adenitis, supperative adenitis, disseminated or osteitis. No deaths are attributed to BCG vaccine between 2000-2005 in the NWT.

BCG Adverse Effects rate for the NWT averaged over 5 years was 1.4 per 1000, see table 1. Generally, moderately severe reactions, such as marked lymphadenitis or suppurative adenitis occur in 0.2 to 4.0 per 1000 BCG vaccines. Estimated incidence for adverse events associated with BCG vaccine in First Nations children, 1996-2000, based on 14,622 doses administered, the adverse rate was 1.0 per 1000 vaccinations[5].

Year	# Mod - Severe	Outcomes	Total No.	Incidence
2005*	0	N/A	279	0
2004*	0	N/A	279	0
2003*	0	N/A	279	0
2002	2	Recovered	279	7.2
2001*	0	N/A	279	0
Total	2		1395	1.4

*Note population based on BCG coverage survey in 2002
Rate based on number of BCG vaccine administered per 1000 population

In late 1999, the NWT Advisory Committee recommended that the HIV status of the birth mother must be known before neonates could be considered for the live attenuated BCG vaccine. This action was undertaken after publication of the review of adverse events associated with BCG vaccine in Canada completed by the Agency's Advisory Committee on Causality Assessment (ACCA) subsequent to reports of disseminated BCG infection identified by the IMPACT (Immunization Monitoring Program-Active) system of hospital-based surveillance[6,7].

Conclusions for discontinuation of BCG program:

It is reasonable that we start to plan for discontinuation of BCG vaccine. The status of TB in the NWT is edging on the criteria for BCG discontinuation as outlined by IUATLD.

While the pulmonary smear positive rate and the annual risk of infection still exceeds the IUATLD recommendation, the smear positive rate has been declining for the past five years and the mean age of the 2005 cases was 58 years, as reported in the *Annual TB Report for 2005*, article included in this publication. An NWT advisory TB committee will be struck within the next year to address when and how BCG vaccine will be discontinued in the NWT. The most important aspect of this endeavor will be ensuring adequate resources are available to ensure early infection and disease are diagnosed and treated timely. Until this planning is done, we will continue to recommend BCG vaccine for all newborns in the NWT who are at risk of disease as outlined in section 9 of the *NWT TB Manual*.

Summary:

While this article focused on three main concerns presented during the two day conference, there were many other topics equally interesting and educational. Such topics included positive outcomes from community networking, clinical aspects of diagnosis and treatment, and personal stories sharing the realities and devastation many experienced during the 1960's and 70's. The TB conference brought many different faces of TB to the participants, allowing a forum to share experiences and to learn from one another.

References:

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Community Health Representatives

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The long-term survival of northern Aboriginal peoples has depended on Traditional Knowledge (TK), where relationships with the environment and key values have been passed from one generation to another[1] . Today, TK is being recognized outside Aboriginal communities as important and necessary for issues that involve healthy relationships and lifestyles, the environment, and care for future generations. Increasingly, Community Health Representatives (CHRs) throughout the Northwest Territories serve as a critical link between a Western medical system and traditional Aboriginal communities.

TK can be defined as "knowledge that derives from, or is rooted in, the traditional way of life of Aboriginal people". TK is the accumulated knowledge and understanding of the human place in relation to the universe. This encompasses spirituality, relationships with the nature and the use of natural resources, and relationships between people. TK is reflected in language, social organization, values, institutions and laws."[2].

In order to strengthen the CHRs' role and capacity as a community link and catalyst, the Health Promotion unit of the Department of Health and Social Services, supported the participation of CHRs in a 30 credit certificate program as part of their continuing professional development. In June 2006, seven CHRs graduated from a Keyano College certificate program. They received training which strengthened their health promotion skills through analysis of the human developmental cycle across the life span . Traditional Aboriginal views of human development were presented and discussed throughout the training. The seven CHRs (see table 1) compiled insights from their TK and shared important learnings with each other and with their instructors.

Table 1: Graduates of the Keyano College

l-r Hon. Michael Miltenberger	Minister Health and Social Services
Betty Tetso, CHR	Deline, Sahtu Region
Winnie Greenland, CHR	Fort McPherson, Beaufort Delta Region
Anita Pokiak, CHR	Tuktoyuktuk, Beaufort Delta Region
Monique Laing, CHR	Behchoko, Tlicho Region
Alice Kimiksana, CHR	Holman, Beaufort Delta Region
Virginia Sabourin, CHR	Fort Simpson, Deh Cho Region
Ann Pischinger, CHR	Fort Smith, South Slave Region
Hon. Joseph Handley	Premier, NWT

TK is passed on in an intimate and oral manner - not in a distant and academic format . The manner in which TK is transmitted is an important aspect of the knowledge itself. With the permission of each CHR involved, a sample of TK, which was shared in their classroom discussions, is provided in this article. Sharing these experiences with TK may encourage other health professionals to begin to recognize value and respect TK and its role in the lives of NWT First Nations, Inuvialuit and Métis peoples.

Respect

A foremost theme of TK is respect. Respect for land, spirituality, people, and animals.

"The indigenous peoples' cultures teach conservation and respect for all that is on the land. For instance, we are told not to take more than what we require. Once when coming to the river to watch beavers at work, my father, as if he knew what was on my mind, said, 'Gotta leave some for seed!' Another indigenous trapper was told that if he trapped more he could sell more furs, use some of the money now for whatever he needed and put the rest in the bank for the future. He replied simply, 'the land is my bank'."

"Whenever something is taken from the land, even pebbles and stones, something is left in its place as a sign of respect for the land and to give thanks. When we take medicine for instance we will leave tobacco or even matches if we have no tobacco. Once, my mother, because she had nothing else to offer at that moment, left one of her bank checks on the ground. My father chuckled as he told her '...how do you know the check won't bounce?'"

"We are told never to show disrespect for older people in the way we talk to them or act in their presence."

"As a sign of respect, immediate family members and extended family members are never addressed by their given names - instead they are addressed as Sister, Brother, Uncle, Aunt, Grandfather, Grandmother, Father, Mother, etc."

"Our traditions tell us reverence and respect for animals which have been killed. We are told to be especially careful never to step over meats or bales of fur or men, even clothing, especially hats. We are taught to always walk around them. Our traditions also teach us never to walk behind an elder, even a younger man, when that person is eating. By tradition, guests have never been allowed to serve themselves when eating - they are served."

"In the high arctic, people pay the highest respect to the polar bear. They are spoken about with reverence, and there is no bragging when stories of their kills are told. Further south, grizzly bears and black bears are treated with the same reverence."

Traditions

TK provides listeners with insight into the meanings of traditions.

"Traditionally, owls, ravens and crows have carried tragic news to the community. Any bird, which flies into a residence, is news of impending death of a loved one and must be killed. Similarly, a dog which barks through the night - crying - brings news of death and is euthanized".

"Sometimes when a child is given the same name as a deceased family member, the child is addressed, not only as the child but also as the deceased family member. When the pregnant woman dreams about a deceased person, it is said [the] person she dreams about will be reincarnated as her baby. The baby will be christened in the name of the person she dreamt about."

Advice

TK offers listeners advice.

"When traveling amongst strange peoples be careful how you speak or how you laugh because there is a danger that someone might become offended - he might think you are speaking about him and laughing at him even though you aren't."

"When we travel, we are told to feed the road (or the river) tobacco or food to ensure safe passage. Likewise, when arriving on territories not your own, it is customary to make an offering to the land."

Empowerment

Perhaps most importantly, TK encourages empowerment in and for Aboriginal peoples. Historical examples, passed from generation to generation, provide opportunities for all to respect and appreciate Aboriginal culture.

Increasingly, TK is being valued for the strong and truthful message it relays. From healthcare professionals to environmentalists, wisdom retained from TK is providing insight and direction. Consequently, CHRs are responding to take an emerging role in finding a balance between a Western medical system and valued Aboriginal traditions.

Note: The enthusiasm and dedication of Allen Jacobs, Instructor, Keyano College, resulted in the compilation of the CHR insights. Christine Raves, Intern, Health Promotion, Dept. Health and Social Services, assisted by providing additional research for the Epinorth publication. The CHRs reviewed the draft article and encouraged their CHR Training Coordinator, Lona Hegeman, Health Promotion Specialist, Department of Health and Social Services, in her efforts to provide text, editing and to support the completion and publication of this TK article.

References:

Report of the Traditional Knowledge Working Group (page 1)
Report of the Traditional Knowledge Working Group (page 2)
Keyano College Course Descriptions
Protecting Indigenous Knowledge and Heritage: A Global Challenge (page 49)

NOTIFIABLE diseases

CUMULATIVE TOTALS for the Northwest Territories (NWT) January - March 2006

		January - December 2005	January - March 2006
		NWT	NWT
Vaccine Preventable Diseases	Hepatitis B	0	0
	Haemophilus Influenza	0	0
	Influenza A	12	9
	Influenza B	3	12
	Pertussis	5	0
	Chicken Pox	17	8
Sexually Transmited/ Bloodborne Diseases	Chlamydia	722	169
	Gonorrhea	140	43
	Hepatitis C	22	4
	Hepatitis, Other	0	0
	Syphilis	0	0
	Invasive Group A Strep	1	0
	Invasive Group B Strep in neonates	0	0
	Invasive Group B Streptococcus	0	0
	Invasive Pneumococcal Disease	13	3
	Legionellosis	0	0
Diseases by Direct Contact/ Respiratory Route	Listeriosis	0	0
	Meningitis/Other Bacterial	0	0
	Meningitis/Unspecified	0	0
	Meningitis/Viral	0	0
	Meningococcal Infections	1	1
	Respiratory Syncytial Virus	53	1
	Tuberculosis	8	0
	Botulism	0	0
	Campylobacteriosis	6	0
Enteric, Food and Waterborne Diseases	Cryptosporidiosis	1	0
	E.Coli 0157:H7	3	0
	Giardiasis	6	1
	Hepatitis A	0	0
	Salmonellosis	3	2
	Shigellosis	0	0
	Tapeworm	0	0
	Trichinosis	0	0
	Yersinia	0	0
Vectorborne/ Other Zoonotic Diseases	Brucellosis	0	0
	Malaria	0	0
	Rabies Exposure	7	0
Antibiotic resistant microorganisms	Methicillin-resistant Staph. Aureus	23	3
	Vancomycin-resistant Enterococci	0	0

NWT HIV Infections Reported from 1987 to 2005

	Age at Diagnosis									Gender		Risk Category					
	Total	0-9	10-14	15-19	20-29	30-39	40-49	50-59	60+	Female	Male	MSM	MSM/ IDU	IDU	Hetero-sexual	Perinatal	Blood Products
	29	1	0	0	4	17	5	1	1	5	24	12	1	7	7	1	1

a Statistics are based on currently available data and previous data may be subject to change
b Men who have sex with men (MSM)
c Injection Drug User (IDU)